

# Hotwire

By Jeff Cote

## *Echosounders: Black Box vs. Built-in*

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Marine electronics manufacturers originally introduced a black box depth sounder to allow boaters with basic chartplotters to add sounder “fish finder” functionality. These external sounders turned a basic navigation screen into a multifunction display (MFD). As fish finders grew in popularity, manufacturers began to include the sounder capability in the actual MFD. As these all-in-one units became smaller and smaller, it allowed boaters with limited space to enjoy the benefits of a depth sounder without adding a sounder black box and integrating it with the chartplotter. Today, larger boats continue to use black boxes even though the installed multifunction display may already have a built-in sounder. So, what is the difference? And which one is right for your boat?

As a quick refresher, an echosounder transducer emits a signal at certain frequencies into the water that is reflected off the seafloor, underwater structures, or fish. This signal or echo is then received by the transducer and it is the echosounder that translates the information from the transducer to the MFD so that we can see and understand the data. There are a few intelligent or smart transducers on the market that can convert simple echoes into depth readings. However, most of today’s recreational transducers require an echosounder, either built into the MFD or connected externally to display the information.

When computer manufacturers first introduced the all-in-one computer, consumers couldn’t get enough. You no longer had to have a huge computer tower under your desk with all the associated wires, and instead could replace it with one clean looking, all-inclusive screen. A similar digital revolution happened in the marine electronics industry. MFDs with a built-in echosounder took up less space, required less equipment, did not require integration or a network, and came with a much lower “plug and play” price tag. For multiple display installs, the only downside was that if the screen with the built-in sounder failed, other displays connected to the display/echosounder would lose the sounder capability as well.

As an alternative, boaters who do not want to put all their fish in one basket can still install an external echosounder. This black box is installed in a secure space that will not be submerged in water, is adequately ventilated, and not exposed to extreme temperatures.

It is also a good idea to put it somewhere that you can easily see the LED lights for trouble-shooting. It requires power and you will have to run the transducer cable to the unit as well as a cable to the chartplotter or MFD. Because these external sounders are so feature-rich, many boaters terminate the transducer cable to a network cable to make the data available to multiple displays throughout the boat.

Larger boat owners also use an external or black box sounder because they have screens that are over 16”. Most manufacturers have built-in sounders up to and including the 16” model. After that, models such as the 17”, 22”, and 24” MFDs do not have an echosounder built in thus keeping down the size and weight of the unit.

Built-in echosounder modules will support up to 1kW-transducer and are of the same quality and effectiveness as an external version of the same. This will allow up to a theoretical 5,000-foot-depth capability paired with the right transducer; basically covering the mass majority of marine electronics users, both pleasure boaters as well as most fishing boats, while keeping the electronics at a lower price point. Some offshore commercial fishing boats require an echosounder module capable of supporting up to a 3kW-transducer, allowing depth capabilities up to 10,000 feet. These sounders are available at a greater cost.

Once installed, both an external black box sounder or a built-in sounder provide unprecedented shallow target resolution or deep water terrain and bottom tracking. Many spread spectrum or CHIRP sounders scan on multiple frequencies, allowing you to track the bottom in deep water with the low chirp (50 kHz) or fish in shallow water with the high chirp (200 kHz).

The newer black box sounders use an 8- or 12-pin transducer connection. Manufacturers like Garmin offer a transducer adapter box that allows you to compensate from 6- to 8-pin or 8- to 12-pin. There are also wire block adapters if you must modify the end of your transducer cable to fit the echosounder module. In some cases, you can simply use your existing transducer with no need for a haulout, saving time and money. Echosounder black boxes even allow you to connect multiple transducers at the same time to view different depths and sideviews. This allows you the ability to enhance your existing screen.

An MFD with a built-in echosounder is great for boats with limited mounting space and costs less than buying the modules separately. However, if there is a failure, you must replace the whole unit. An external sounder is required for larger screens and offers advanced integration. While black box setups are more expensive, if there is a failure it is just a matter of replacing the echosounder or the MFD. Any route you choose, adding an updated sounder to your boat, either a built-in or black box, provides an almost video quality picture of what is happening underneath. **NWY**



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